Substitute Specification

CLAIMS

We claim:

1. (Currently amended) A system to provide performance control of a radioisotope generator, said system comprising:

a radioisotope generator;

an electronic sensor of elution;

an eluted activity measurement sensor;

means for measuring nuclear quality of the eluted radioisotope;

an electronic memory with information for a user;

a communication interface: and

an user interface software.

2. (Original) A system according to claim 1, wherein said radioisotope generator is a Mo-99 / Tc-99m generator.

3. (Original) A system according to claim 1, wherein the electronic sensor of elution measures changes in high frequency conductometry.

4. (Currently amended) A system according to claim 1, wherein the eluted activity sensor is comprised of a Geiger Müller tube, a micro ionization chamber or a solid state detector.

5. (Currently amended) A system according to claim 1, wherein the electronic memory with information is comprised of Lot No., Generator No., activity, calibration date and expiration dates.

6. (Original) A system according to claim 1, wherein the communication interface uses one or more of the following ports of a PC: RS232, USB, or parallel port.

7. (Currently amended) A system according to claim 2, wherein the means for measuring is comprised of a radioactivity sensor protected by a 3 mm lead shield.

8. (Currently amended) A system according to claim 1, wherein the electronic sensor of elution measures changes in photon intensity passing through a portion of elution tubing being transparent to photons.

9. (Currently amended) A system according to claim 1, wherein the electronic sensor of elution measures changes in electrical impedance of a portion of elution tubing.

10. (Currently amended) A system according to claim 1, wherein the electronic sensor of elution measures changes in dielectric capacity of a portion of elution tubing.

11. (Currently amended) A method to detect and measure passage of elution in a radioisotope generator, said method comprising a step from a group consisting of:

using High-frequency conductometry; using Photometry; using Impedanceometry; using Electrical capacitometry; using Emitted radiation detection; and using Magnet-hydrodynamic.

12. (Currently amended) A method according to claim 11, wherein using high frequency conductometry is comprised of measuring changes in electrical resistance of a portion of elution tubing of the generator.

13. (Currently amended) A method according to claim 11, wherein using photometry is comprised of measuring changes in intensity of a light beam going through a translucent portion of elution tubing, a high intensity light emitter being pointed to the translucent portion of the elution tubing, a phototube/photomultiplier being placed on an other side of the translucent portion of said elution tubing of said radioisotope generator, being directly opposite to the light emitter.

14. (Currently amended) A method according to claim 11, wherein using impendanceometry is comprised of measuring changes in frequency of a free oscillator or rod-capacitor, a coil surrounding a portion of the elution tubing and a free oscillator being connected to the coil; wherein a frequency counter detects impedance changes of the coil if liquid passes through.

15. (Currently amended) A method according to claim 11, wherein using capacitometry is comprised of measuring changes in dielectric capacity, two electrodes being placed externally on both sides of a portion of the elution tubing, the tubing being non-metallic with an external diameter of not more than 2 mm, liquid changing an internal dielectric constant of a capacitor formed by the electrodes and the tubing, a capacitometer being connected to the electrodes measuring changes of capacity when liquid passes through the tubing.

16. (Currently amended) A method according to claim 11, wherein using emitted radiation detection is comprised of measuring changes in a radiation field generated by the eluted radioisotope passing through the elution tubing of said radioisotope generator, a properly-shielded-from-other-sources-of-radiation radiation detector being placed against said elution tubing of said radioisotope generator.

17. (Currently amended) A method according to claim 11, wherein using magnet-hydrodynamic is comprised of changes to an orthogonal electric field generated by a magnetic field applied to elution tubing, a magnetic field being applied on a portion of the elution tubing, two electrodes orthogonal to the magnetic field measuring a low electric field that is a function of the liquid flow, and when the liquid passes through the tubing, the electric field increasing and indicating elution.

18. (Currently amended) A method to measure the dryness of a "dry" Mo-99 / Tc-99m generator, said method comprising the steps of:

using high frequency conductometry to measure changes in electrical resistance through a column, electrodes being placed on the IN and on the OUT metal tubing or needles of the generator.

19. (Currently amended) A method to detect and measure the radionucleidic purity of the Tc-99m as eluted from a Mo-99 / Tc-99m generator, said method comprising the steps of:

measuring changes in a radiation field generated by eluted radioisotope passing through elution tubing of the radioisotope generator, a second properly-shielded-from-other-sources-of-radiation radiation detector being placed against a 3mm thick lead shield, in direct contact with said elution tubing of said radioisotope generator.

20. (Currently amended) A method to transmit the data generated according to Claim 11, further comprising:

transmitting data to a PC or data processor through a RS232 or USB or a parallel port or any other input-output port of a PC.

21. (Currently amended) A system according to claim 5, wherein the electronic memory is comprised of a non-volatile memory such as EEPROM, the memory, upon connecting to a PC , transferring information stored by a manufacturer specific to a particular generator.

22. (Currently amended) A system according to claim 1, wherein user interface software is able to process and log all data introduced from the generator.